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Period 3 Science

Mrs. Laguna

Atoms Movie Notes

* Experimentation with substances has been evident all throughout history.
* Ice, helium gas, and dry ice are all pure substances.
* A pure substance is made up of one kind of material with definite properties.
* Salt is a pure substance and has a definite square shaped crystal. It is white and has a salty taste. These are some of its properties.
* Aluminum and helium are elements (Helium only has helium atoms, aluminum only has aluminum atoms).
* An element is a simple pure substance.
* An element cannot be changed into a simpler substance.
* All matter is made of elements.
* They are only 100 different kinds of elements, and they make up every single thing in the universe.
* Jewelry contains the element silver.
* Iron is an element that rusts over time.
* All objects are made of matter, and matter has mass and volume.
* It is impossible with the naked eye, to see the smallest particle of matter.
* An example of indirect observation is wind.
* Scientists have used indirect observation for ages.
* Atomos is the Greek word for “not to cut” or “indivisible”.
* The smallest piece of oxygen, is an oxygen atom. However, atoms can still be cut into even smaller pieces.
* It’s very hard to draw atoms to scale.
* An atom is the smallest piece of matter that cannot be commonly broken down.
* Dalton’s Theories

1. All matter is made of atoms and can be combined.
2. Atoms of the same element are exactly alike.
3. Atoms of different elements are different.
4. Atoms of two or more elements can be combined to form new substances.

* Thomson’s Model of the Atom (JJ Thomson):

1. He was a late 19th century scientist who stated atoms were not simple solid spheres.
2. Electrons are small particles located outside the nucleus and have a negative charge.

* Ernest Rutherford: developed a more complete understanding of the structure of atoms.
* Ernest Rutherford:

1. He shot positively charged particles (hydrogen nuclei) at a sheet of gold foil and most of them passed through the foil. (because they’re so small.)
2. His prediction is that atoms are mostly made of space.
3. The ones that repelled he believed had hit the positively charged center of the atom.
4. The nucleus is the positively charged center of the atom.
5. The nucleus in an atom is like a marble in the center of a stadium. (It is mostly empty space.)
6. All matter around us is mostly empty space.
7. Negatively charged particles surround the positively charged nucleus.

* Neils Bohr:

1. Proposed that electrons orbit around the nucleus.
2. Each electron has a fixed amount of energy and that they each orbited depending on their energy levels. (like onion skin)
3. The further you get away from the nucleus, the more energy the electrons have.
4. Electrons can move between energy levels.

* Electrons form an electron cloud.
* In the electron cloud theory, electrons don’t have definite patterns or paths.
* Electron cloud: the region where electrons would probably be found swirling around the nucleus.
* You will never really know where an electron is, only the probability of where it may or may not be.